



Figure 22. High-volume water rinse is used to clean roots. (PHOTO BY B. EDMUNDS)



Figure 23. Eliminator on a packing line. Roots smaller than 1.5 in (3.8 cm) in diameter fall through the bars. (PHOTO BY G. HOLMES)



Figure 24. Proper lighting and height for grading table allows workers to adequately see and reach cull roots. (PHOTO BY G. HOLMES)

The dump operator can have a major influence on impacts. Operators must be able to see into the dump tank so that they can carefully monitor the dumping operation. Sweetpotatoes should not be dumped into an overfilled tank, which causes excessive impacts.

Unloading sweetpotatoes into the dump tank generates a large amount of dust. In addition to creating problems for workers and machinery, this dust usually contains decay-causing spores that are a ready source of contamination

for nearby sweetpotatoes. For these reasons, it has become customary to partition or wall off the dump tank from the rest of the packing line. Additionally, ventilation fans should be installed near the dump tank to draw the dust outside the building and away from the rest of the line. Fans also help keep dust away from forklift and dump operators.

Dump tanks vary in size but may hold several thousand gallons of water. A portion of this water is flushed regularly, along with the heavier soil, through a large, air-operated slide or butterfly valve located on the bottom of the tank. The air cylinder may be switched on manually or activated by a simple float switch and timer circuit. Many newer dump tanks also have automatic monitors that adjust the water level as needed.

To reduce decay, some packers treat the dump tank water with antimicrobial agents. Sodium hypochlorite (liquid bleach) is commonly used. Unfortunately, bleach is quickly deactivated by large amounts of soil in dump tanks and must be recharged at regular intervals (dependent on the amount of soil entering the dump tank). The gases released from treated dump tanks can irritate the skin and eyes of workers and corrode metal surfaces. Very high concentrations of bleach in dump tanks may also lead to root bleaching. Other treatments that have been used with limited success include ozonation and copper ionization. Although these treatments may kill pathogens in relatively clean water, suspended soil particles diminish their efficacy, making them impractical on packing lines. Several studies have shown that sanitizers are not effective for controlling *Rhizopus* soft rot.

Washing. Most sweetpotato packing lines use a water rinse step to remove clinging soil. Waterfall/curtains and normal- or high-pressure spray washers may be used (Figure 22). High-pressure washers have become popular because of the difficulty of removing darker soils from some sweetpotato cultivars. Water at pressures as high as 250 pounds per square inch (psi) is directed by spray nozzles at the surface of sweetpotatoes as they travel over rotating brushes.

The dump tank and spray washer can use several thousand gallons of water per hour. Even if a well or other source can supply this amount of water, packing line operators should consider disposal: The less water a packing line uses, the less that needs disposal. For this reason, many sweetpotato packing lines have screens and tanks to collect the water from the wash step and use it to supply the dump tank. This simple plumbing arrangement can reduce water use (and disposal) by two-thirds or more.

Impacts are generally low during washing because most packing lines wash over a brush bed. Some brush beds are immediately preceded by a metal incline, which itself can be a source of high impacts.